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SET NEW RECORDS IN USSR HIGH-SPEED METAL CUTTING

REQUESTS DEVELOPMENT OF ALLOY FOR HIGH-SPEED CUTTING -- Moscow, Moskovskaya Pravda, 23 Mar 51

Before going to Hungary in 1950, Pavel Bykov tested a new screw-cutting lathe, Model 1620, produced by the Moscow Krasnyy proletariy Plant.

At that time he was able to achieve a cutting speed of 1,138 meters per minute. Today, he can make this machine cut metal at the rate of 2,400 meters per minute.

Parts machined at this speed do not require subsequent grinding. It is possible to machine parts up to 400 millimeters in diameter on this lathe.

At Bykov's request and suggestion, the designers have made some changes in this machine, such as a 20-millimeter lengthening of the cross slide. As a result, parts of larger diameter can be machined.

The machine has great technological possibilities. Parts of any shape can be formed automatically with the use of a former or model.

A group of workers at the Krasnyy proletariy Plant, headed by V. T. Levshunov, leading designer, has been awarded a Stalin Prize for developing this machine.

How can parts of complex profile be turned so rapidly on the 1620 lathe? At the rear of the machine, a former made of metal or fiber is mounted on a bracket. An electric slide follows the shape of the former and transmits movement to the cutting tool in conformance with the given profile. Such an electrical copying device is being used on lathes for the first time in machine-tool building practice.

The range of spindle speeds on this machine is from 18 to 3,000 meters /revolutions?/ per minute. With a change in the diameter of the part, speeds are adjusted automatically.

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The highest cutting speed achieved by Bykov is 2,400 meters per minute. At present, the hard alloy cannot withstand higher speeds. Bykov has turned to scientific workers at the Hard-Alloys Combine with a request that an alloy

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be developed with which even better results could be obtained.

BEATS HIGH-SPEED RECORD -- Moscow, Moskovskiy Komsomolets, 31 Mar 51

Sergey Bushuyev, a well-known high-speed lathe operator at the Moscow Automobile Plant imeni Stalin, developed a hard-alloy cutter which made it possible for him to exceed his previously established cutting speed of 2,060 meters per minute.

When Bushuyev heard that Pavel Bykov had achieved a cutting speed of 2,400 meters per minute, he pledged to do even better. On 30 March, Bushuyev hit 2,600 meters per minute.

ADOPT NEW MULTIEDGE CUTTER -- Moscow, Izvestiya, 22 Mar 51

Stakhanovites and high-speed workers at the Khar'kov Tractor Plant imeni Ordzhonikidze are successfully using multiedge cutting tools proposed by the Institute of Automobile and Tractor Technology.

These new cutters permit a considerable increase in cutting speeds, possess high durability, and considerably shorten the time required for auxiliary operations such as tool changing and sharpening.

The cutter is a prismatic blade (stolb) with three, four, or five cutting edges. In contrast to the standard hard-alloy blade which is soldered to the holder, this type of blade is held in a slot by means of a spring plate and bolt. Each cutting edge is used in succession until the entire top face of the cutter is worn. The cutter is then inverted and each cutting edge is used in succession on the bottom face of the cutter.

In machining piston pins at the automatics shop, each ordinary cutter could cut at a speed of not more than 107 meters per minute and required regrinding every 40-50 minutes. The prismatic cutter can cut at a speed of 147.5 meters per minute. In addition, it can operate for 2 hours without regrinding. As a result of decreasing the time required for auxiliary operations, the productivity of machine-tool operators has increased 60 percent.

PRODUCE NEW-TYPE CUTTING TOOLS IN LARGE QUANTITIES -- Moscow, Vechernyaya Moskva, 29 Mar 51

The Moscow Tool Plant is producing cutting tools in large quantities with hard-alloy blades soldered to the shank by a special method. These cutters are exceptionally durable, increasing in the speed of cutting metal three to five times.

CUT METRIC, BUTTRESS SCREW THREADS AT HIGH SPEEDS -- Moscow, Moskovskiy Komsomolets, 20 Mar 51

More than 35 percent of the machine-tool park at the Moscow Machine-Tool Building Plant imeni Sergo Ordzhonikidze has been converted to high-speed cutting with the use of hard-alloy tools.

Yuriy Dikov and Nikolay Chikirev have been awarded a Stalin Prize for developing a new technology. They mastered high-speed cutting of metric buttress, and worm threads on parts made of steel with a high-degree of hardness. This is the last word in metalworking technology. This innovation has increased labor productivity to 20-35 times that of conventional norms.

Ordinarily, only highly skilled lathe operators are charged with cutting threads, especially buttress and worm threads. This operation is usually performed with high-speed cutters at low cutting speeds.

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Dikov and Chikirev used hard-alloy tools at high speeds. Thus, 145-millimeter-diameter and 2-millimeter-pitch metric threads were cut at 455 meters per minute instead of the norm of 75; and 80-millimeter-diameter, 3-millimeter-pitch buttress threads, at a speed of 300 meters per minute instead of 76.

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By increasing the depth of cut, they were able to reduce the number of passes to less than one half the usual number. Using multiple cutters; selecting the correct position for starting, stopping, applying, and withdrawing the cutter, using graduated dials and verniers which decreased the number of times a part had to be checked by gauges; and better installation and securing of parts all led to a considerable decrease in the time required for auxiliary operations.

Dikov and Chikirev operate the same screw-cutting lathe in alternating shifts. Because the machine requires frequent adjustment, they carefully consider ways and means of utilizing every second to the best advantage. Before each shift they look over the lathe, check the blanks, and study the drawings and technologies.

When cutting screws with shoulders, the innovators employ the return stroke of the spindle, which has a speed of 1,850 revolutions per minute. The cutting tool is installed with the cutting edge down; the cutter feed is from the spindle toward the tailstock.

The new methods have been widely disseminated among the plant's lathe operators.

CONVERT TO HIGH SPEED MILLING OPERATIONS -- Leningradskaya Pravda, 18 Mar 51

During 1949 - 1950, a complex brigade at the Leningrad Kirov Plant converted 145 milling operations to high-speed methods. One hundred thirty-eight men have been taught high-speed methods of metalworking.

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(Leningradskaya Pravda, 24 Feb 51)

CHIP REMOVERS PREVENT ACCIDENTS CAUSED BY HIGH-SPEED CUTTING -- Moscow, Trud, 28 Mar 51

At a meeting on preventing accidents when cutting metal at high speeds, Bolotin, an engineer from the Krasnyy proletariy Plant, discussed in detail the problem of breaking and winding steel chips during the cutting process by means of special grooves on the front edge of the cutting tool. This type of tool has increased labor productivity and eliminated injury to workers from chips.

He also told about a number of designs of safety chucks developed at the plant, and about the design of a chip remover proposed by the Moscow Institute for Workers' Protection of the VTsSPS and used at the plant in the machining of brittle metals.

Berezin, an engineer from the Borets Plant, described the use of universal devices for breaking chips, and demonstrated a number of designs of chip breakers.

Participants at the meeting listened with interest to Ivanov, a high-speed lathe operator, as he described a chip breaker with an additional "plate" secured to the front edge of the cutter.

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SCORE LACK OF INTEREST IN HIGH-SPEED METHODS -- Stalinabad, Kommunist Tadzhikistana, 21 Mar 51

Representatives from various Stalinabad metalworking enterprises met to discuss problems concerning further introduction of high-speed methods of metalworking, and increasing the number of Stakhanovites and high-speed workers.

At many plants, conversion to high-speed methods is taking place on a large scale. At the Stalinabad Plant imeni Ordzhonikidze, 20 percent of the metal-cutting equipment has been converted.

At the Traktorodetal' Plant, 56 machine tools have been converted to high-speed operations.

However, the introduction of high-speed methods of working have not received due attention at enterprises in this capital. Shustov, chief engineer at the Stalinabad Plant imeni Kirov and Pauk, deputy secretary of the plant's party organization, stated that high-speed methods of metalworking cannot be applied at their shops because the lathe operators manufacture single parts and do not produce in series. This argument can be refuted by the fact that the famous Bortkevich constantly works on the production of single items, yet his reputation as a high-speed worker is known throughout the country.

Party and komsomol organizations of a number of the city's plants stand aloof from the introducton and popularization of these methods.

Serious study of high-speed methods has not been organized at the city's enterprises. Courses given at the Stalinabad Plant imeni Ordzhonikidze are of very short duration and do not give the worker a full understanding of the processes. Engineers, technologists, and foremen are mostly to blame.

The work of individual Stakhanovites who have converted to high-speed methods is not always effective. A great deal of time is still spent on auxiliary operations, and machining time is used inefficiently.

The Administration of Labor Reserves is also standing aloof from the training of high-speed workers. Training programs at trade schools have no provision for teaching high-speed methods, and mastering these methods at the shop is left up to the individual after he has completed his training in the labor reserves.

Participants at the meeting raised the question of setting up a scientific-technical society of engineers in Stalinabad, printing books and pamphlets which would popularize the methods of outstanding high-speed workers, and complementing the technical libraries with the latest literature on the work of high-speed workers in Moscow, Leningrad, Sverdlovsk, and Kiev.

At the end of the meeting, Zakharov, chairman, emphasized the importance of active participation of the plant party and komsomol organizations in popularizing and broadening application of high-speed methods of metalworking. He noted that the number of Stakhonovites in the city's enterprises who have converted to high-speed methods is still small. He also discussed close cooperation between students and workers.

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